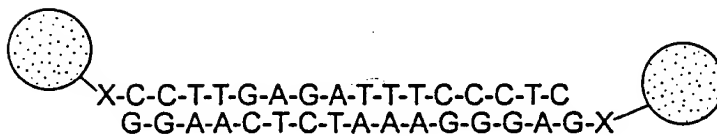
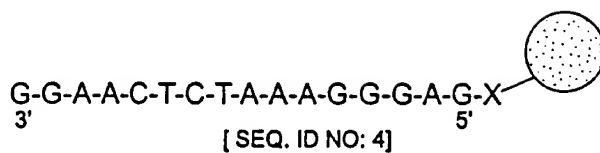
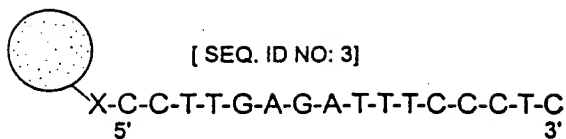
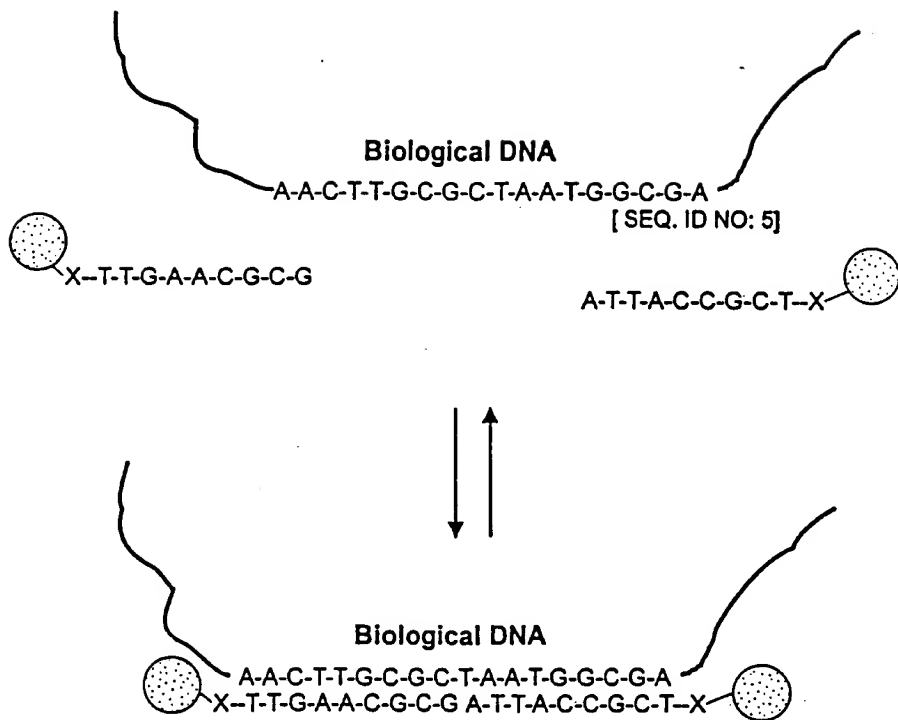


FIG. 1

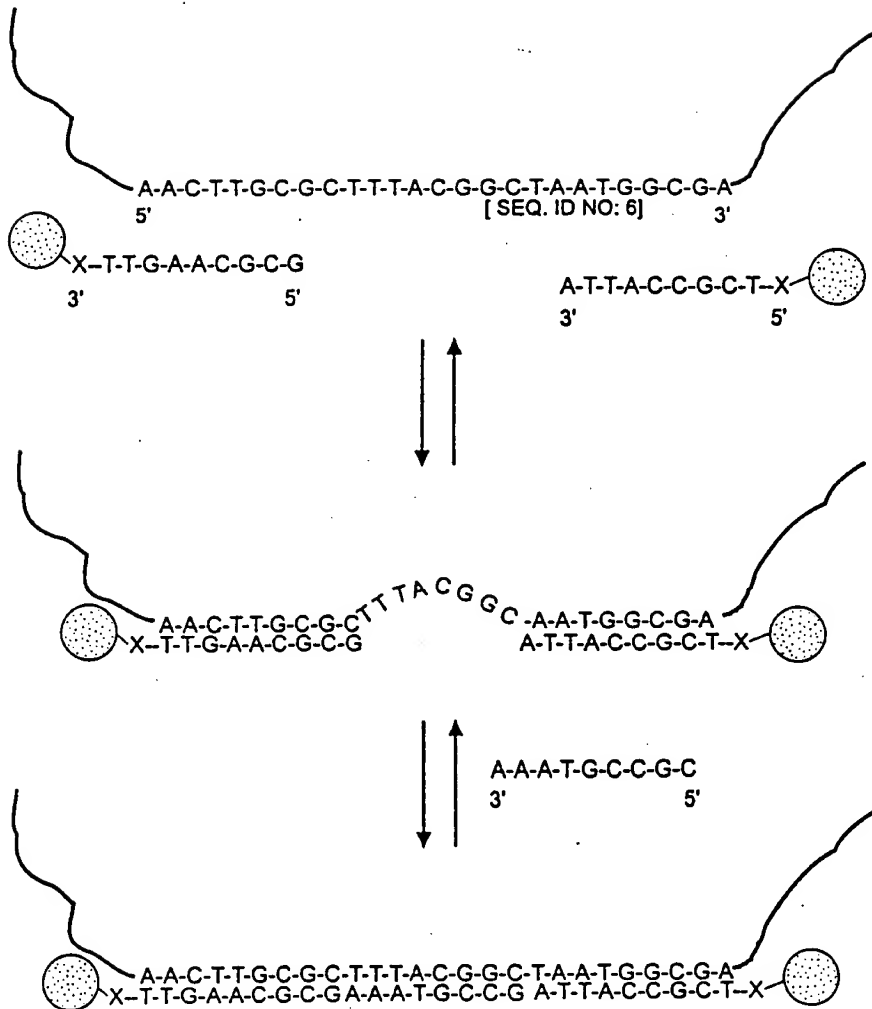


00075204-10000

FIG.2



0002594-1000

[illegible]

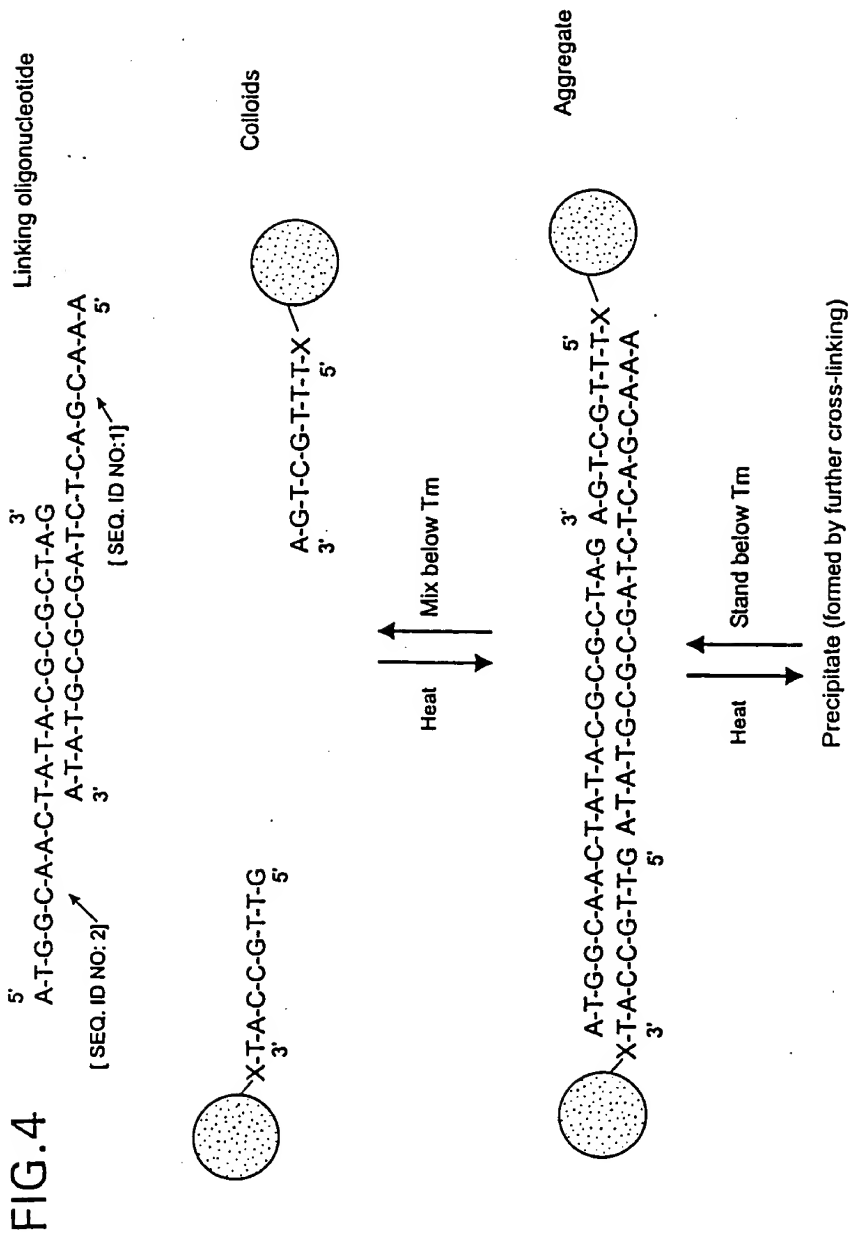
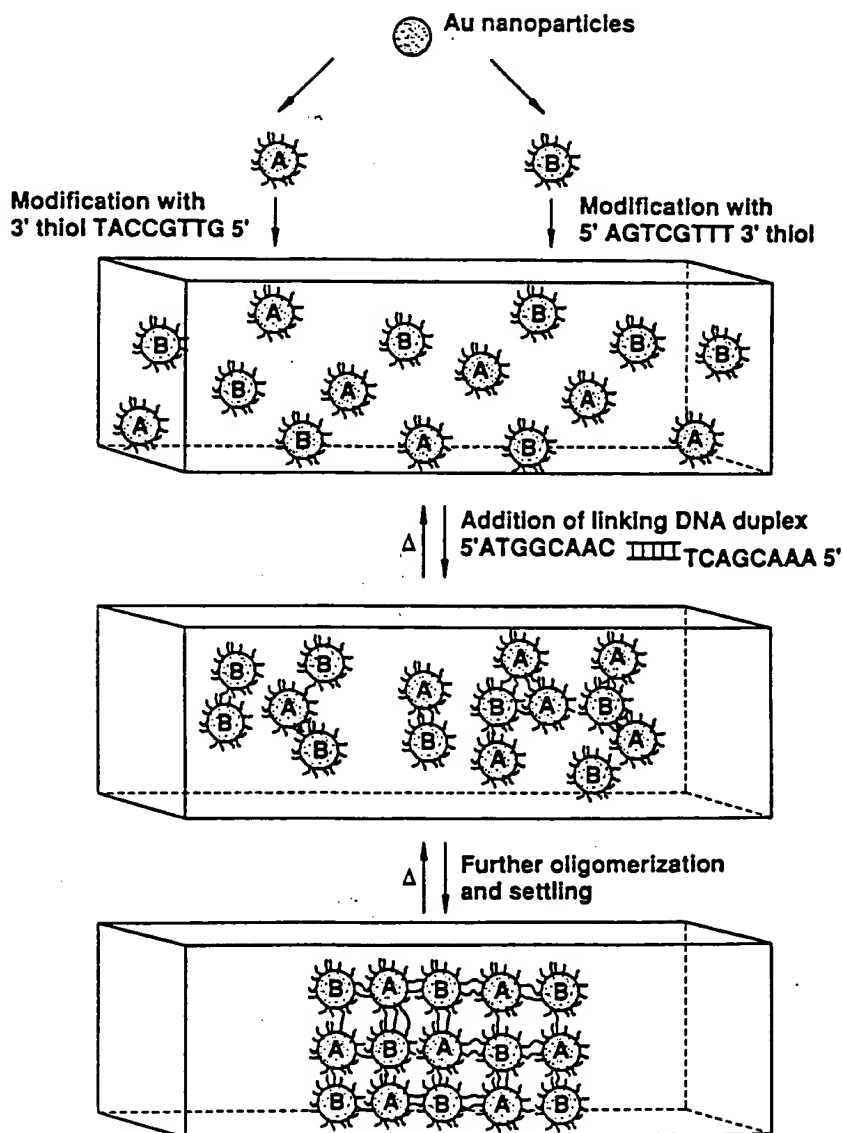


FIG.5



1781

1

—

FIG. 6C

FIG. 7

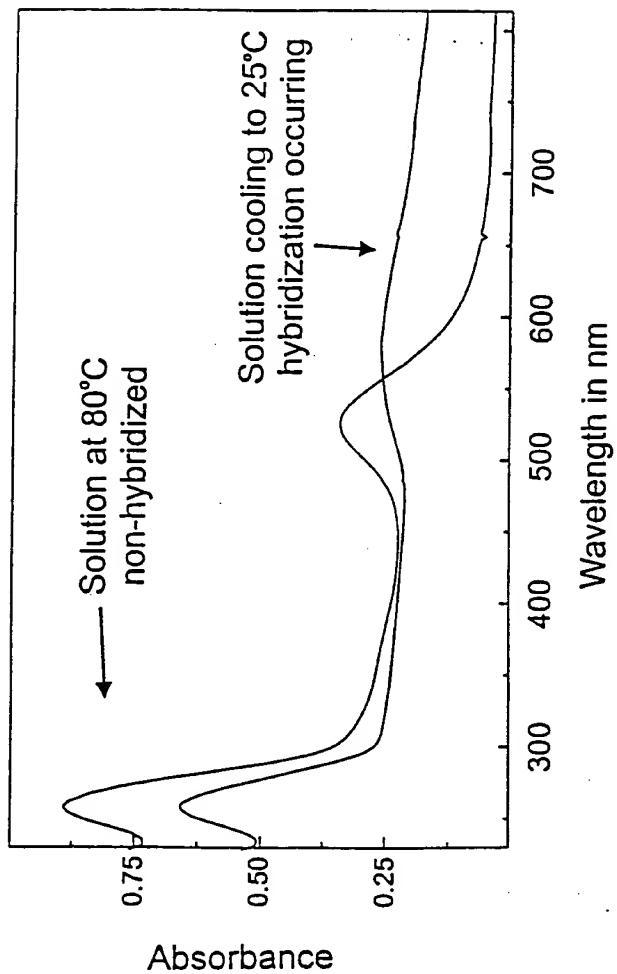


FIG. 8A

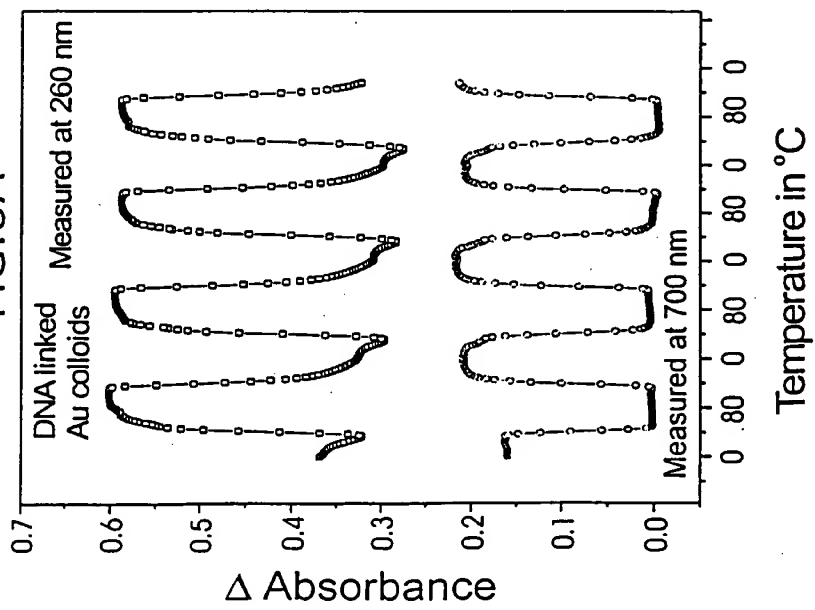
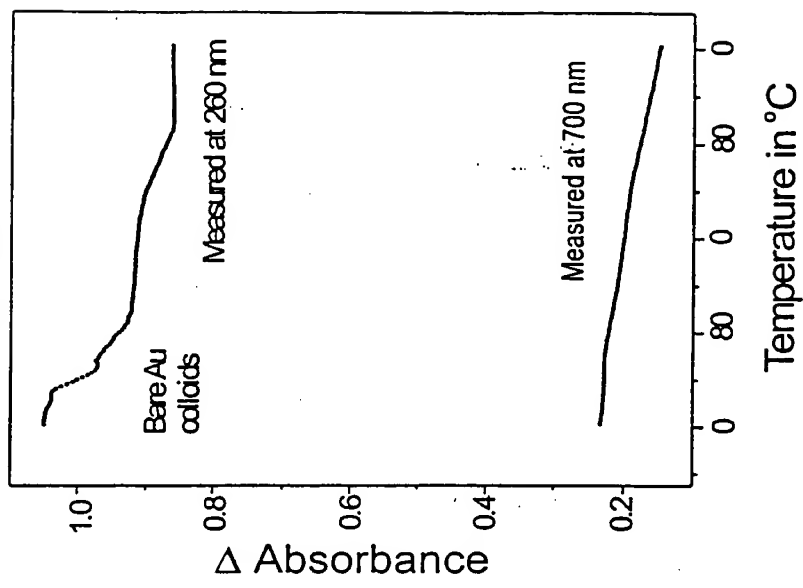


FIG. 8B



00975501-101201



FIG.9A

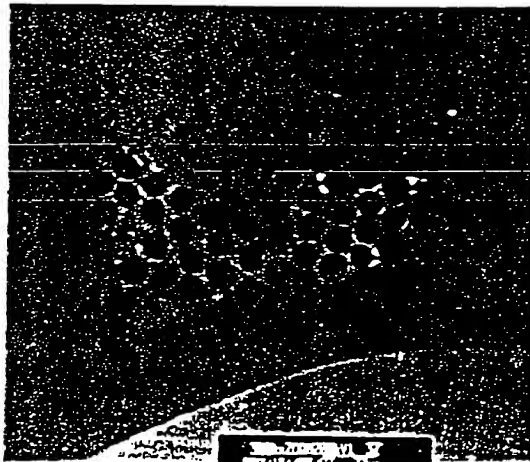


FIG.9B

FIG.10

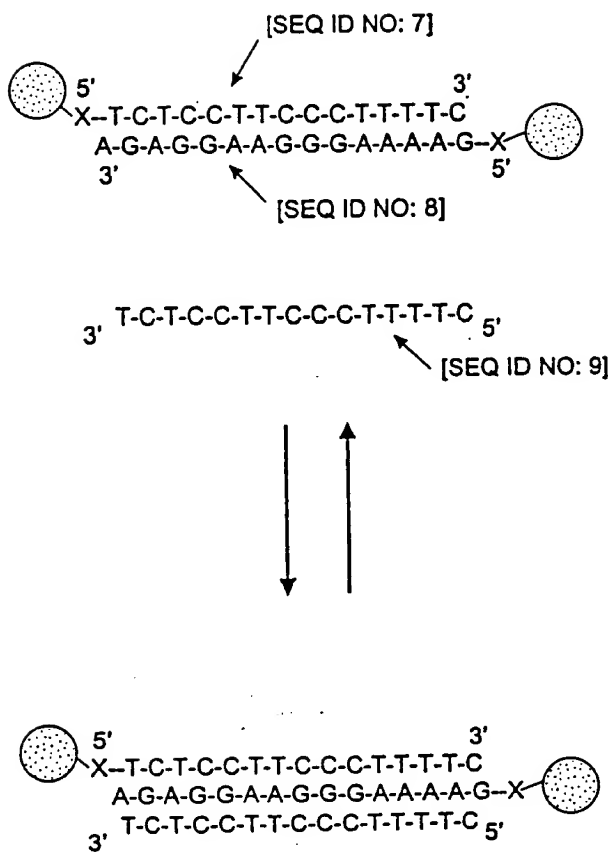


FIG. 11

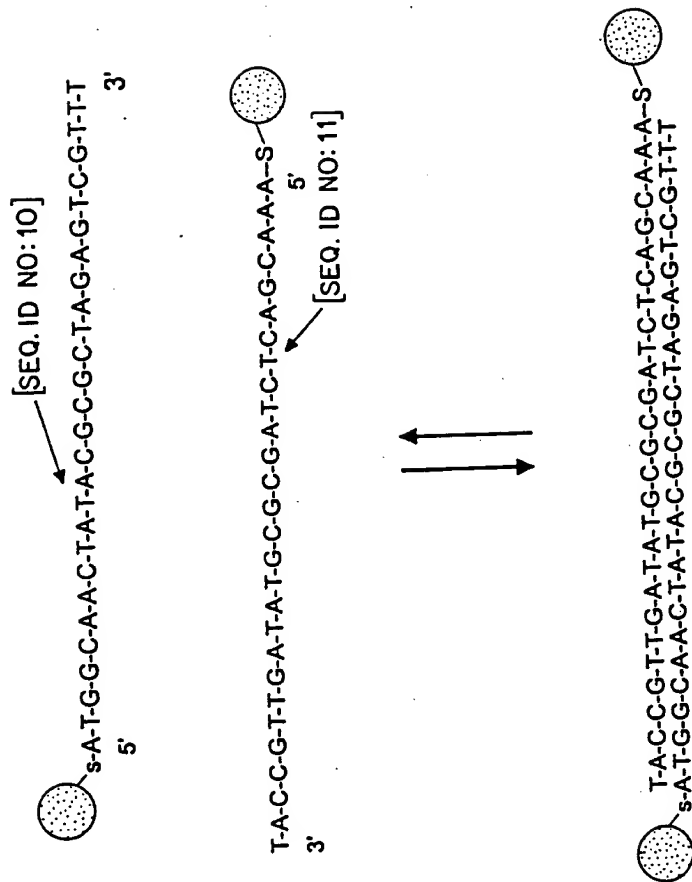


FIG. 12A

Complementary Target

[SEQ. ID NO:12]

[SEQ. ID NO:12]

1 2

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

[SEQ. ID NO: 14]

^ [SEQ. ID NO:13]

FIG. 12B

Probes without Target

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

FIG. 12C

Half Complementary Target

$$\begin{array}{c}
 \text{1} \qquad \qquad \qquad \text{2} \\
 \text{3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G} \\
 \text{5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A } \boxed{\text{T-G-G-C}} \text{A } \boxed{\text{A-C-T-A-T-A}} \text{C-G-C}
 \end{array}$$

[SEQ. ID NO: 15]

FIG. 12D

Target - 6 bp

1
2

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C

5' G-T-C-G-A-T-A-G-G-A-A-C-G-A-C-T-C-T-A-G-C-G-C

T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

[SEQ. ID NO:16]

FIG. 12E

One bp Mismatch

$$\begin{array}{cccccccccccccccc}
 & & & & \underline{1} & & & & & & & & & \underline{2} & & & & & & \\
 3' & T & - & C & - & G & - & T & - & A & - & C & - & C & - & A & - & G & - & C & - & T & - & A & - & T & - & C & - & C & & T & - & T & - & T & - & G & - & C & - & T & - & G & - & A & - & G & - & A & - & T & - & C & - & G & - & C & - & G & \\
 5' & A & - & G & - & C & - & A & - & T & - & G & - & G & - & T & & T & & G & - & A & - & T & - & A & - & G & - & G & & A & - & A & - & A & - & C & - & G & - & A & - & C & - & T & - & C & - & T & - & A & - & G & - & C & - & G & - & C &
 \end{array}$$

[SEQ. ID NO: 17]

FIG. 12F

Two bp Mismatch

1
2

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C

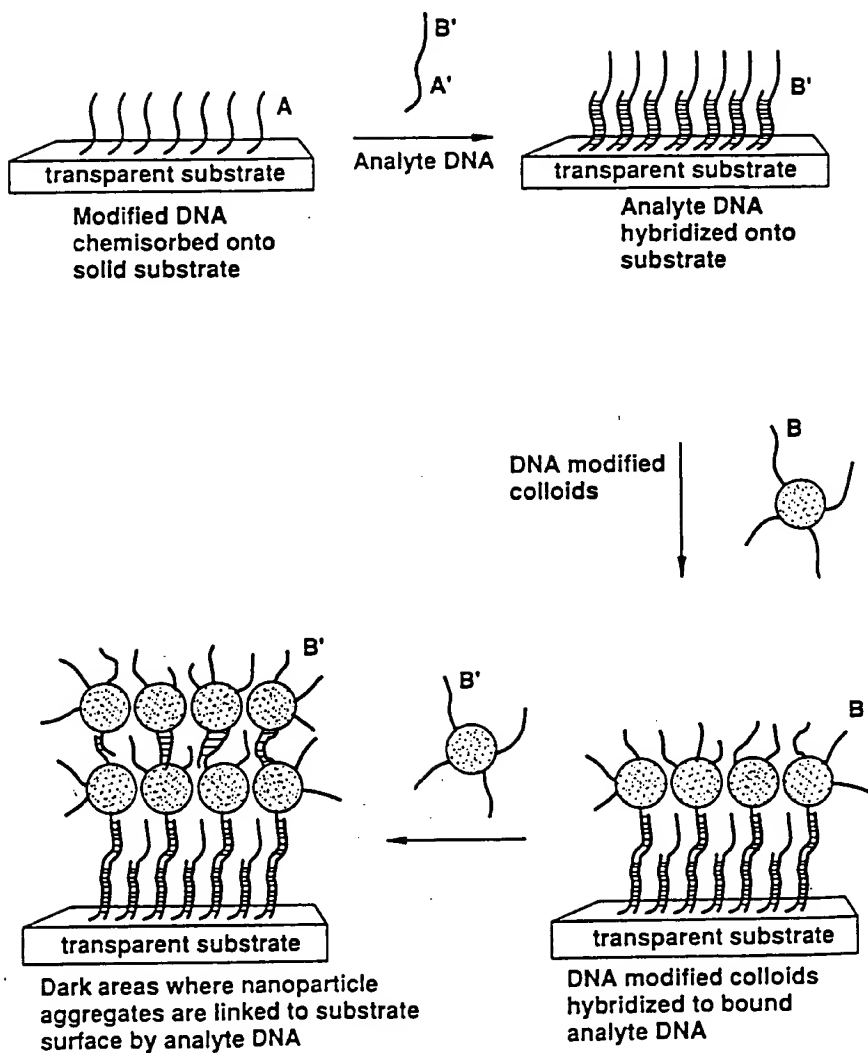
5' A-G-C-A-T-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

()

T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

[SEQ. ID NO:18]

FIG.13A



4097504-104304

FIG.13B

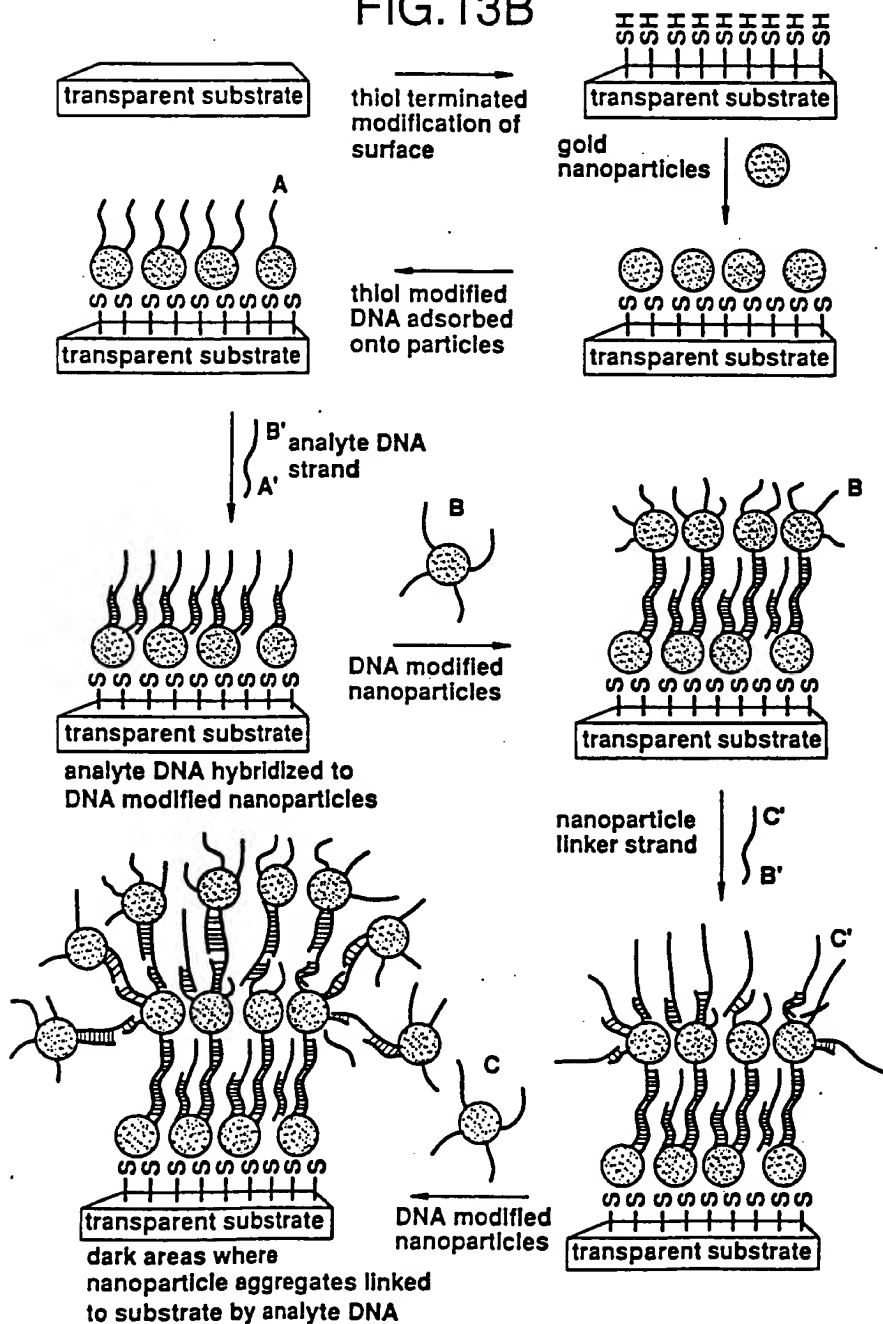


FIG.14A

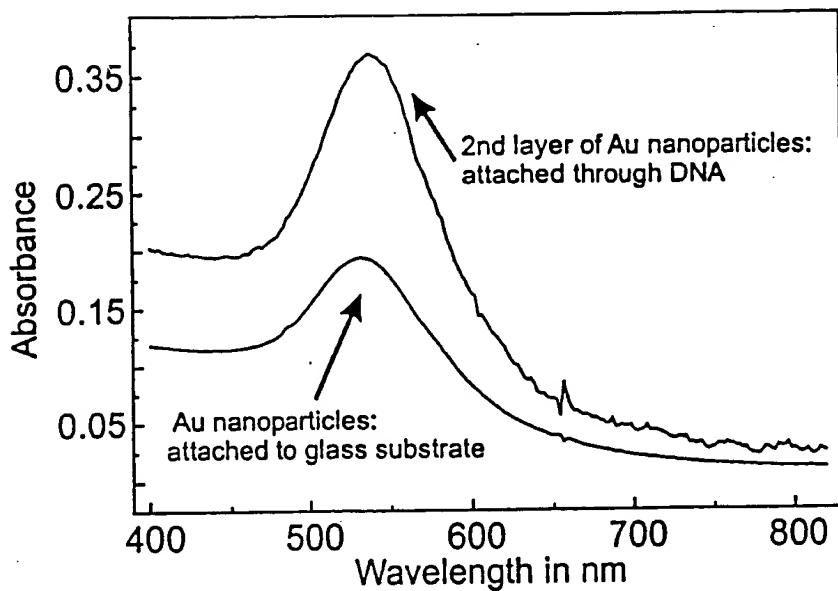


FIG.14B

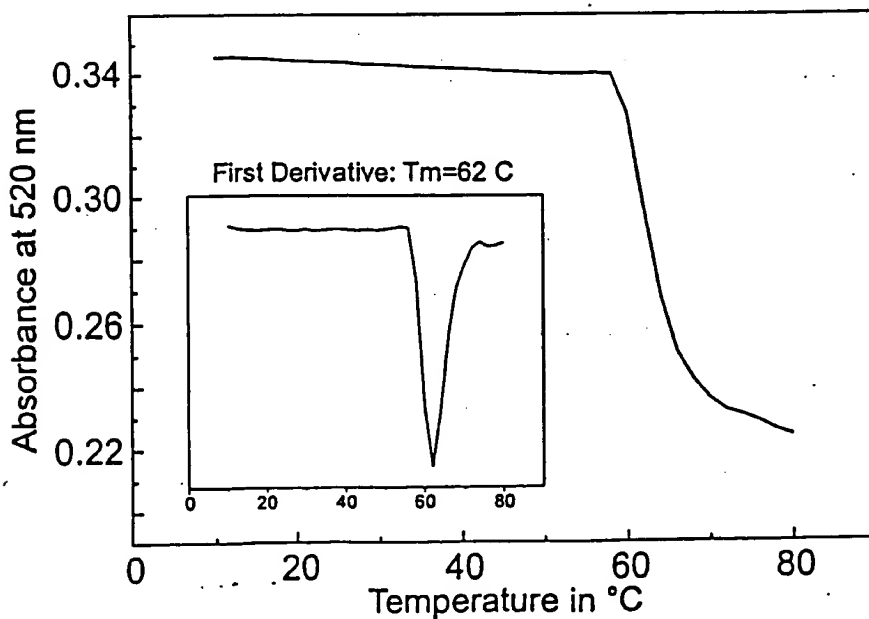


FIG15A

Probes with No Target

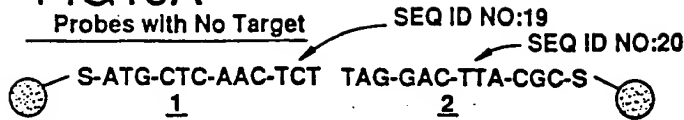


FIG15B

Half-Complementary Target

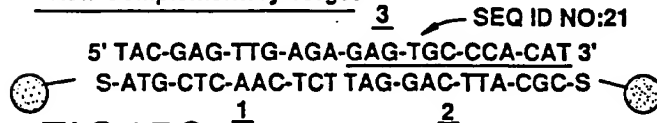


FIG15C

Complementary Target

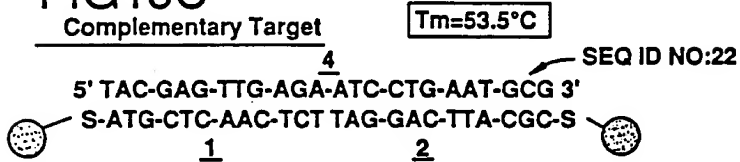


FIG15D

ONE Base-Pair Mismatch at Probe Head

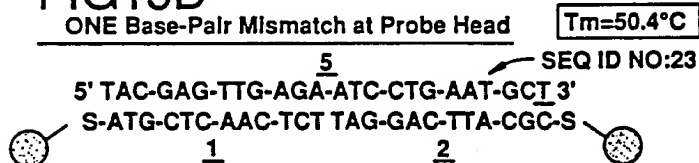


FIG15E

ONE Base-Pair Mismatch at Probe Tail

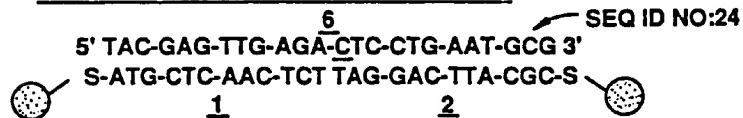


FIG15F

ONE Base Deletion

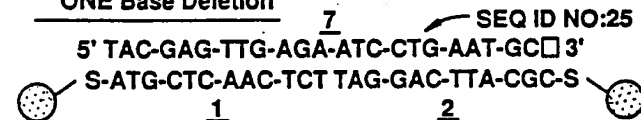


FIG15G

ONE Base-Pair Insertion

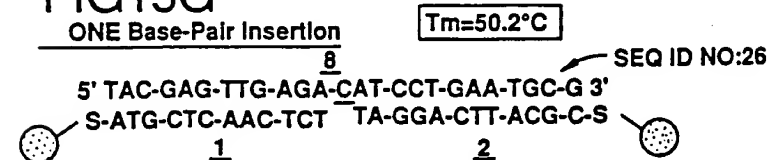


FIG. 16A

24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —

1

2

FIG. 16B

48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —

1

2

FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S —

1

2

FIG. 17A

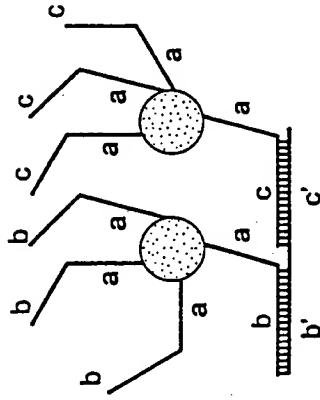


FIG. 17B

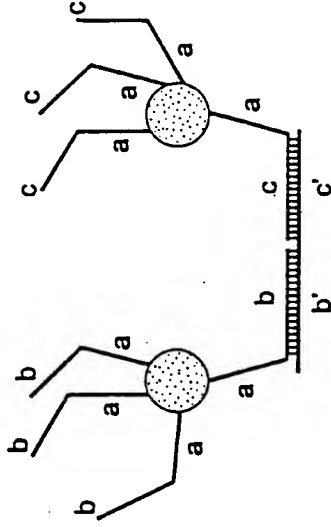


FIG. 17C

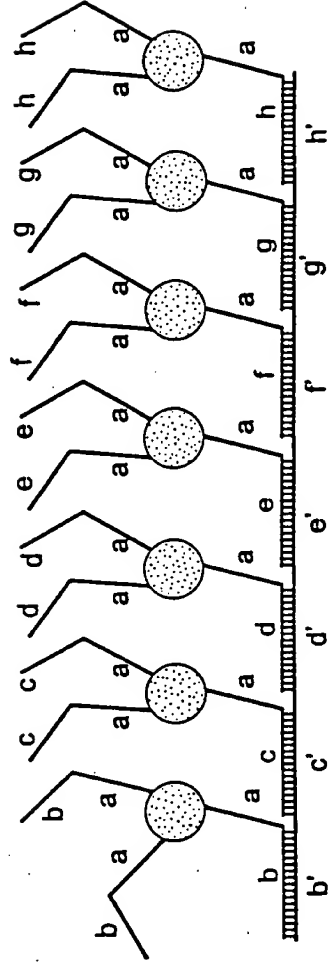


FIG.17D

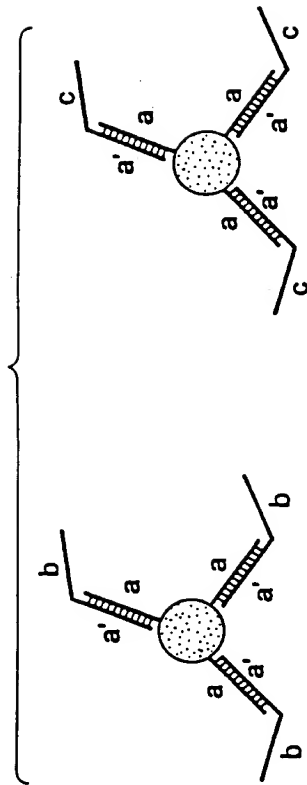


FIG.17E

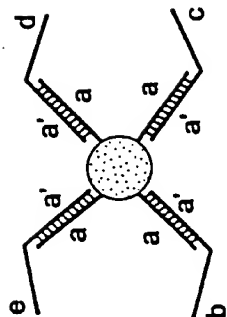


FIG.18

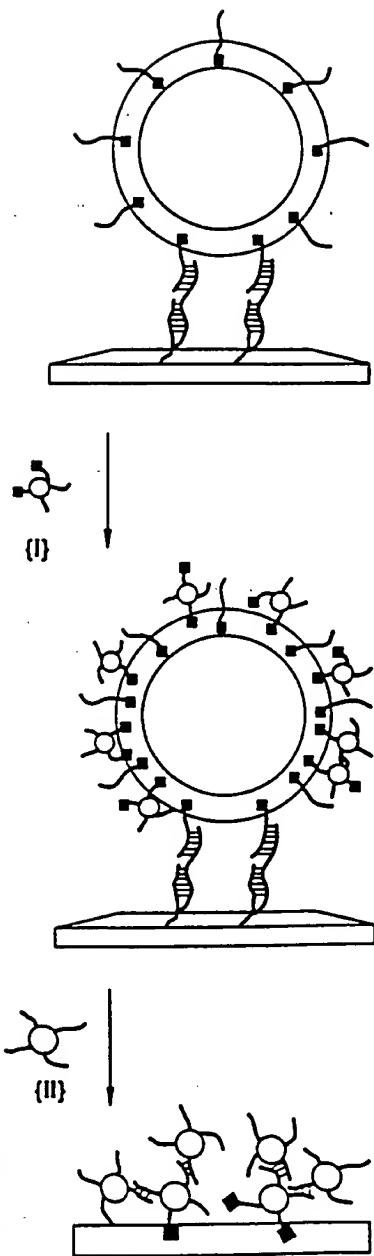


FIG.19A

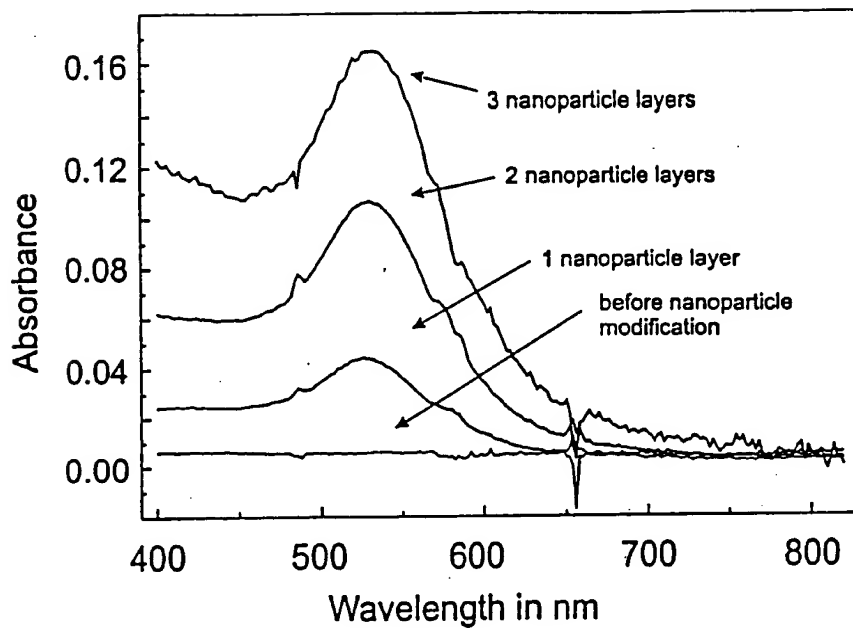


FIG.19B

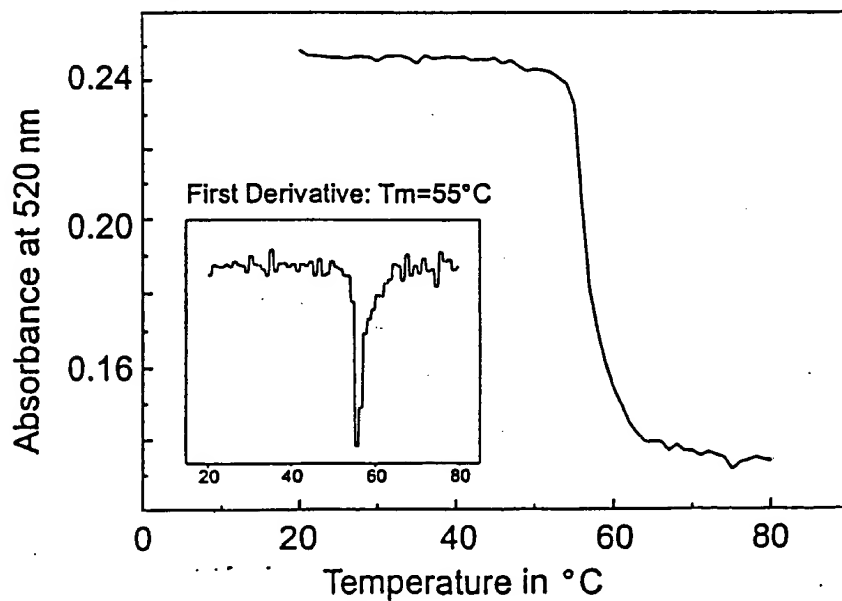


FIG.20A

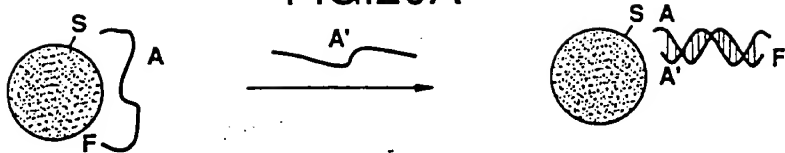
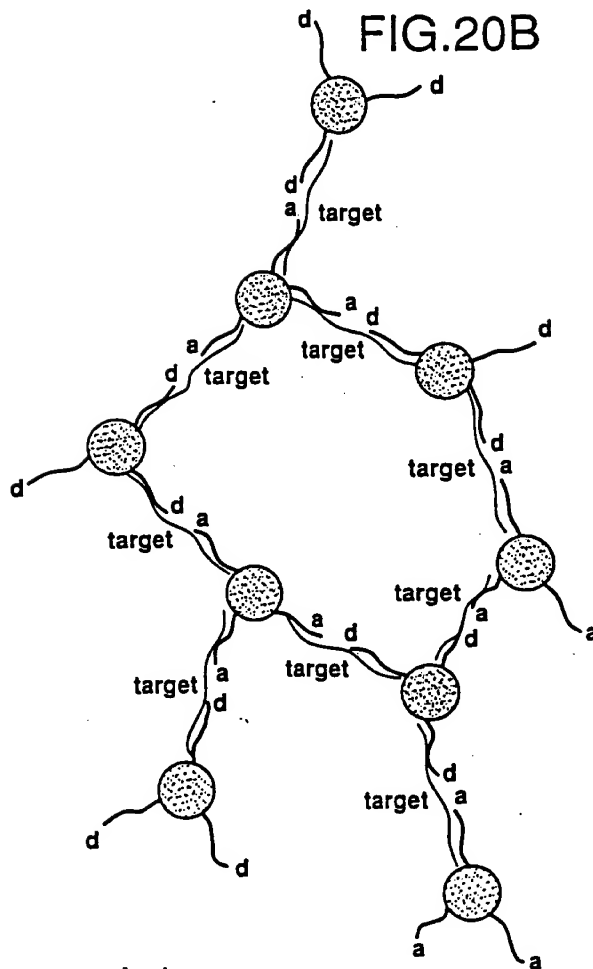
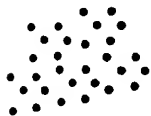


FIG.20B

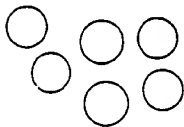


Oligonucleotide
modified Au
nanoparticle probes



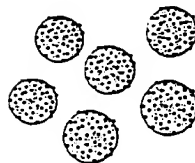
Red

Fluorophore labeled
oligonucleotide modified
latex probes



White/Fluorescent

Au/Latex hybrid

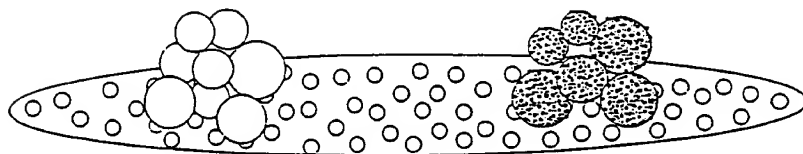


Pink/Non-fluorescent

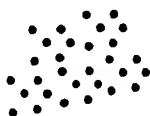
Target
Oligonucleotide

No Target
Oligonucleotide

Target
Oligonucleotide



All Au probes pass
through membrane

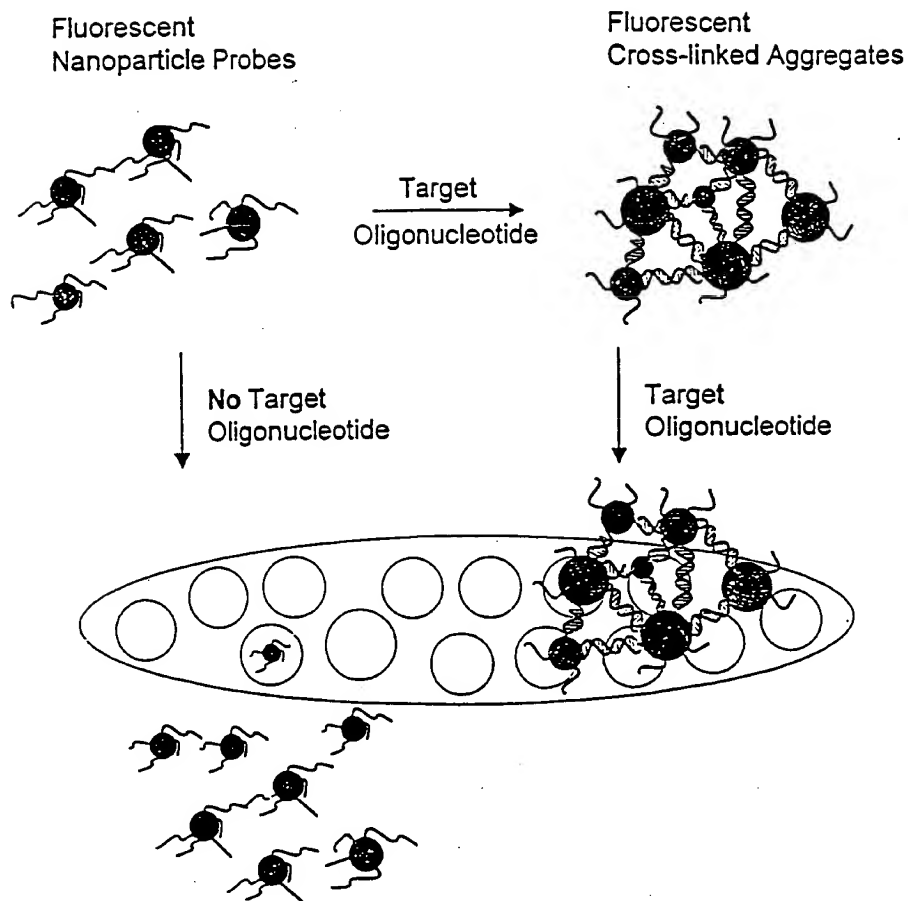


Excess Au probes
pass through
membrane



FIGURE 21

FIGURE 22



The fluorescent nanoparticle probes pass through the membrane

The fluorescent cross-linked aggregates are retained by the membrane

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

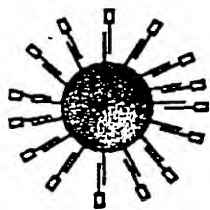
141 mer Anthrax PCR product [SEQ ID NO:36]

3' CTC CCT AAT AAC AAT [SEQ ID NO:37]
3' TTA TAA CTA TTC CTA [SEQ ID NO:38]
Oligonucleotide-Nanoparticle Probes

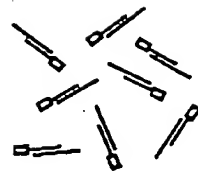
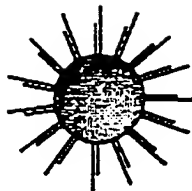
Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT [SEQ ID NO:39]
3' A TCT CTT CAT TAA TTA AGC AGT TGT [SEQ ID NO:40]
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT [SEQ ID NO:41]
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA [SEQ ID NO:42]

FIGURE 23



Satellite Probe



Detection Signal

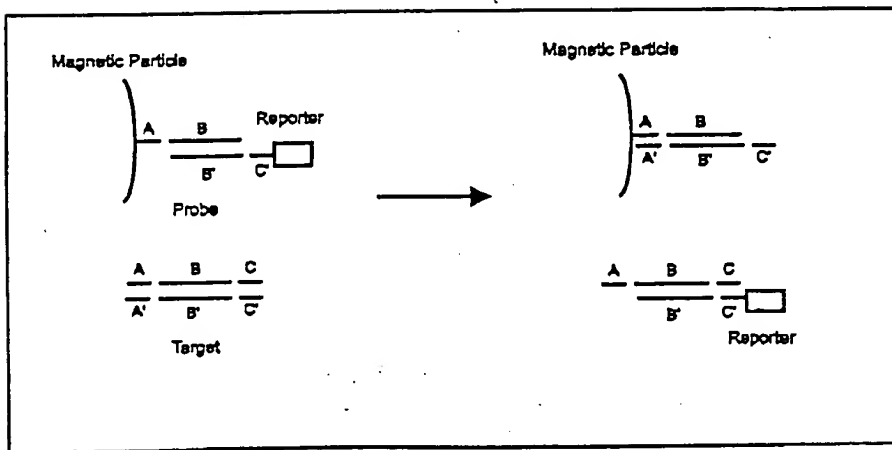


FIGURE 24

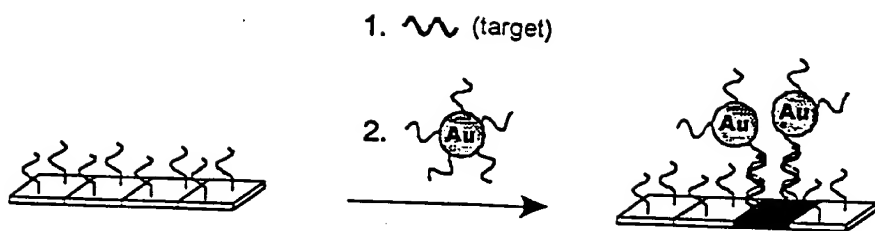


FIGURE 25A

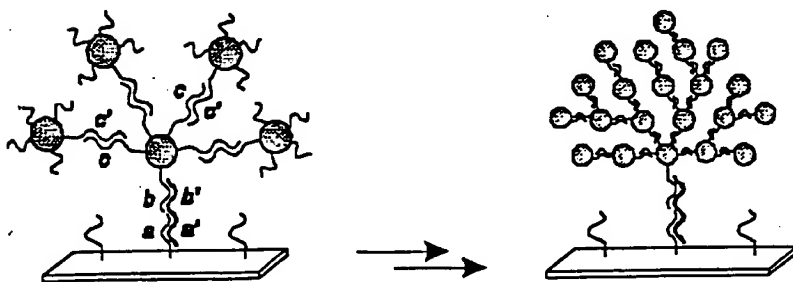
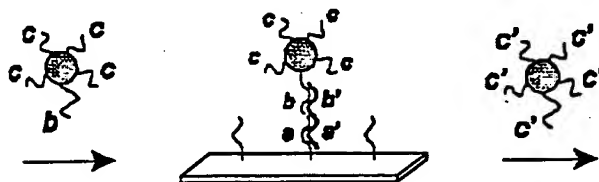
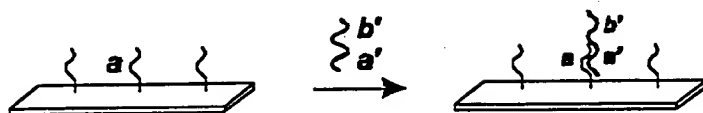


FIGURE 25B

Chemical reaction scheme showing the formation of a thiolate-terminated polymer. A polymer chain with a terminal carboxylic acid group (HOOC-CH₂-CH₂-S-) reacts with a thiol (HS-) to form a thioether linkage (-S-CH₂-CH₂-S-). The reaction is catalyzed by a base (B⁻).

SE9 ID
 No: 48
 TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG
 S-(A)₁₀-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-(A)₁₀-S-
 SE9 ID
 No: 46
 SE9 ID
 No: 47

FIGURE 26

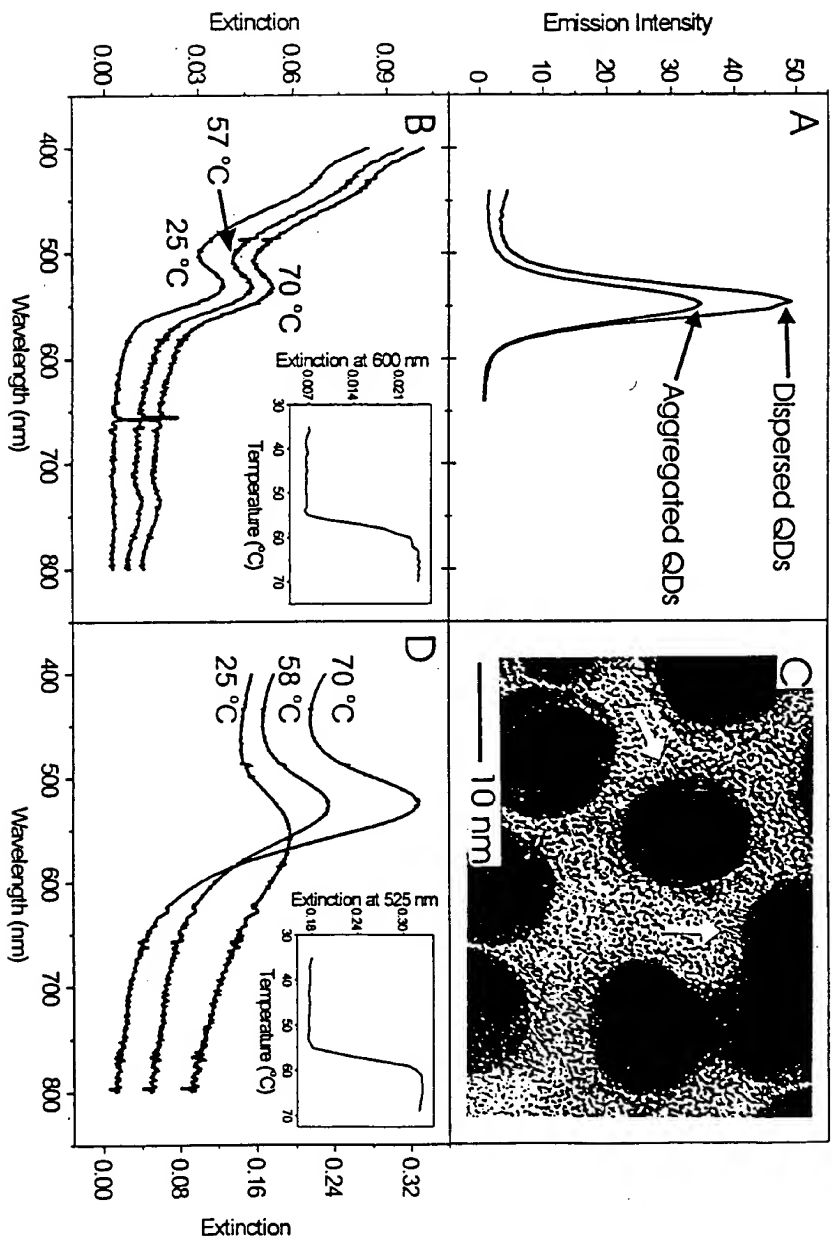


FIGURE 3

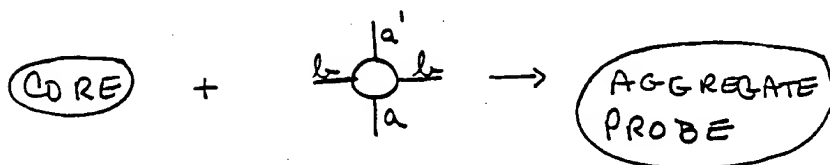
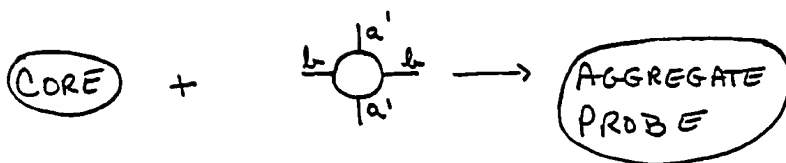
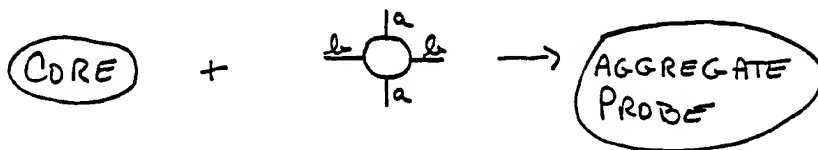
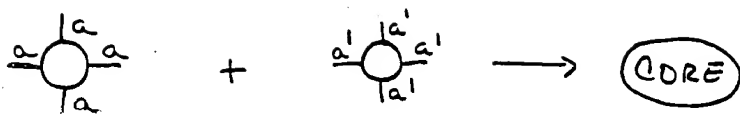


FIGURE 28A

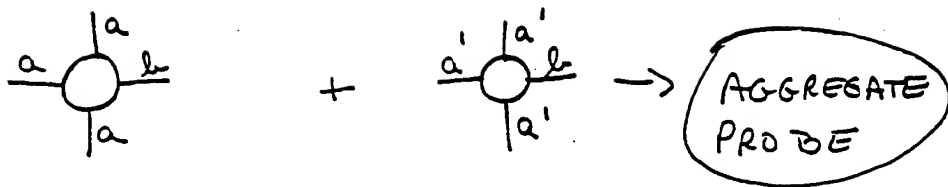


FIGURE 28B

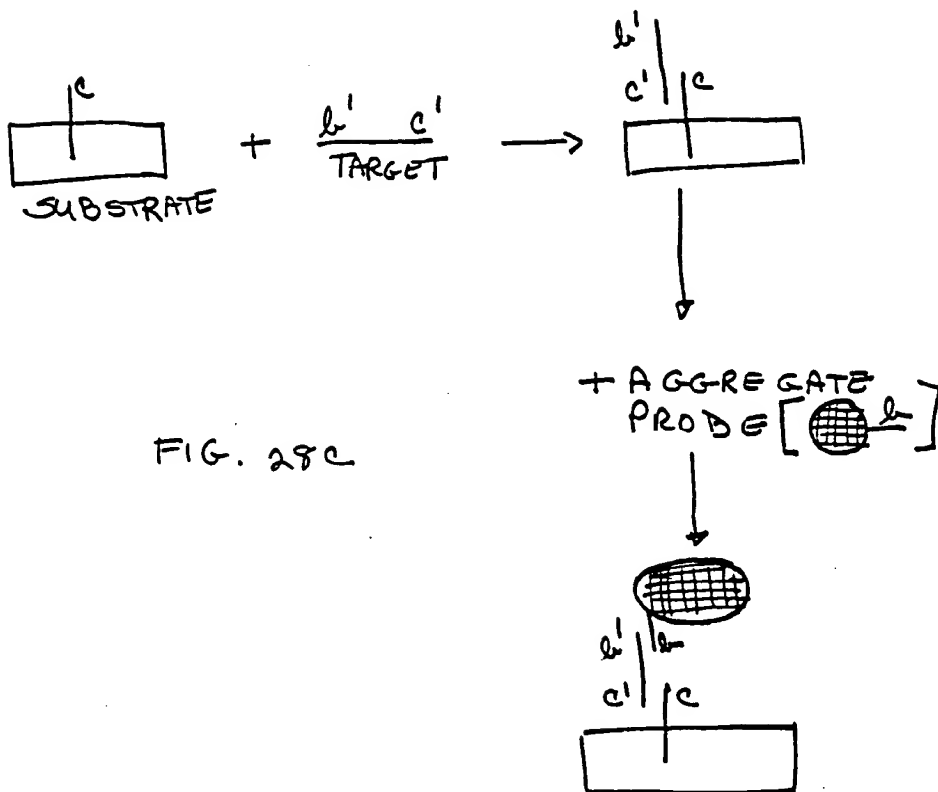
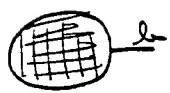


FIG. 28C

00075004-101304


 AGGREGATE
 PROBE

+ $\frac{b' \quad c'}{\text{TARGET}}$ + $\begin{array}{c} c \\ | \\ \text{d} \end{array}$

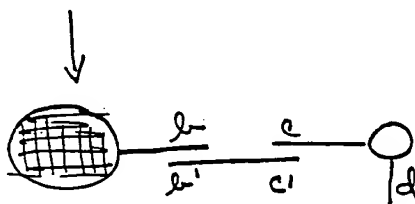

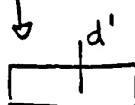
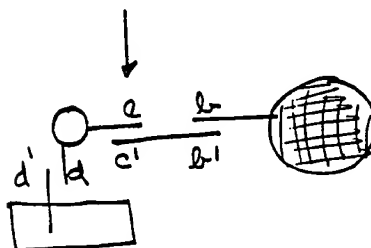


FIG. 28D

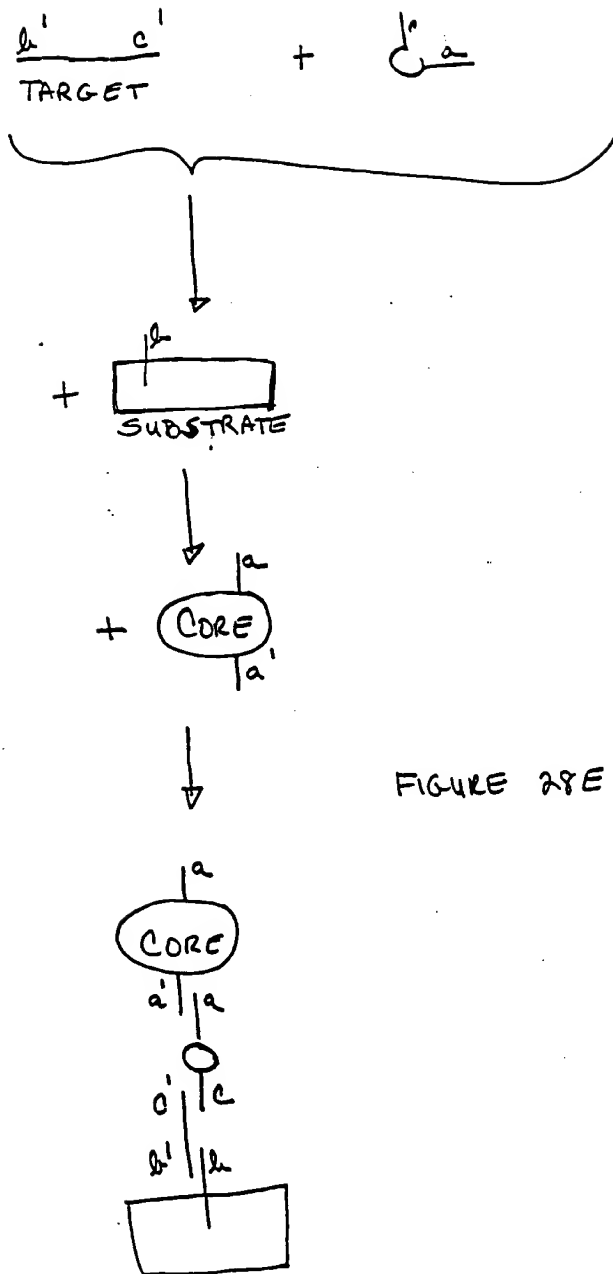
REMOVE EXCESS 
 BY CENTRIFUGATION

+  SUBSTRATE



00075501-101204

00075504 101201



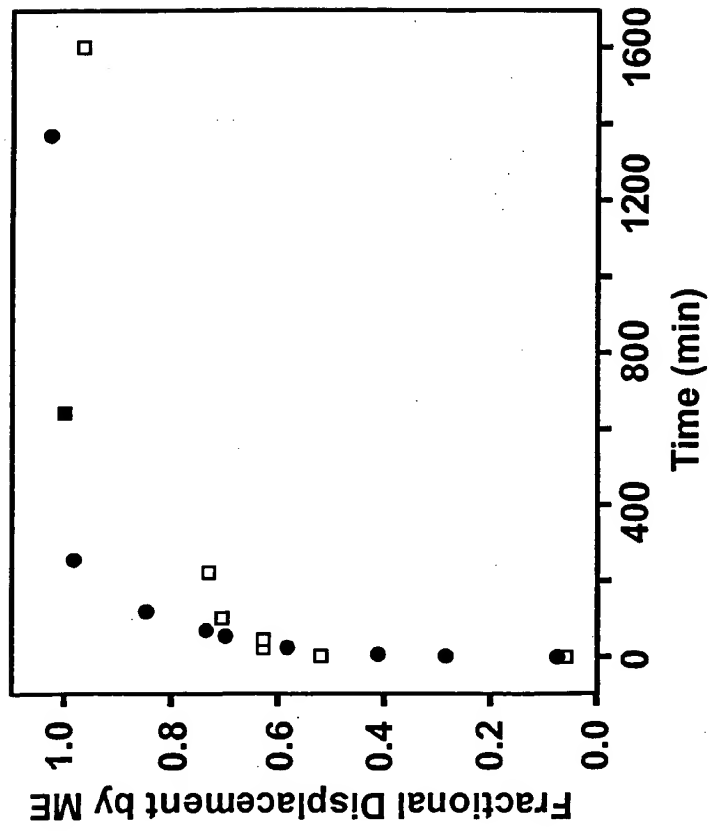


Figure 29

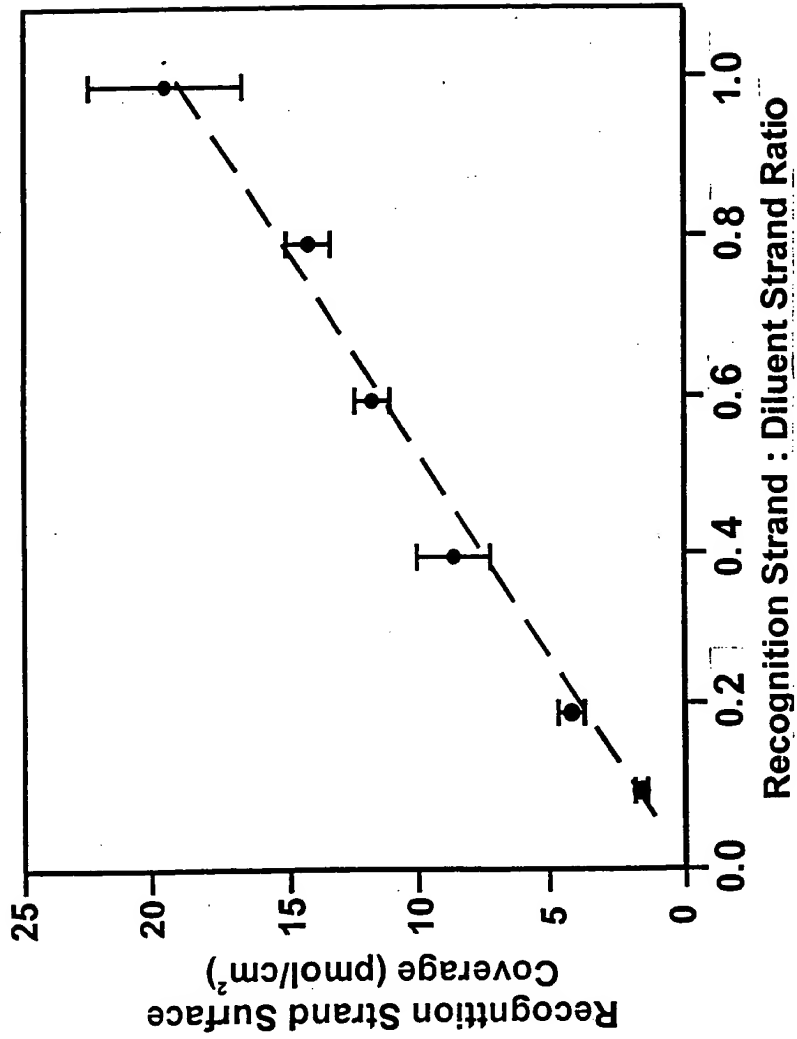


Figure 30

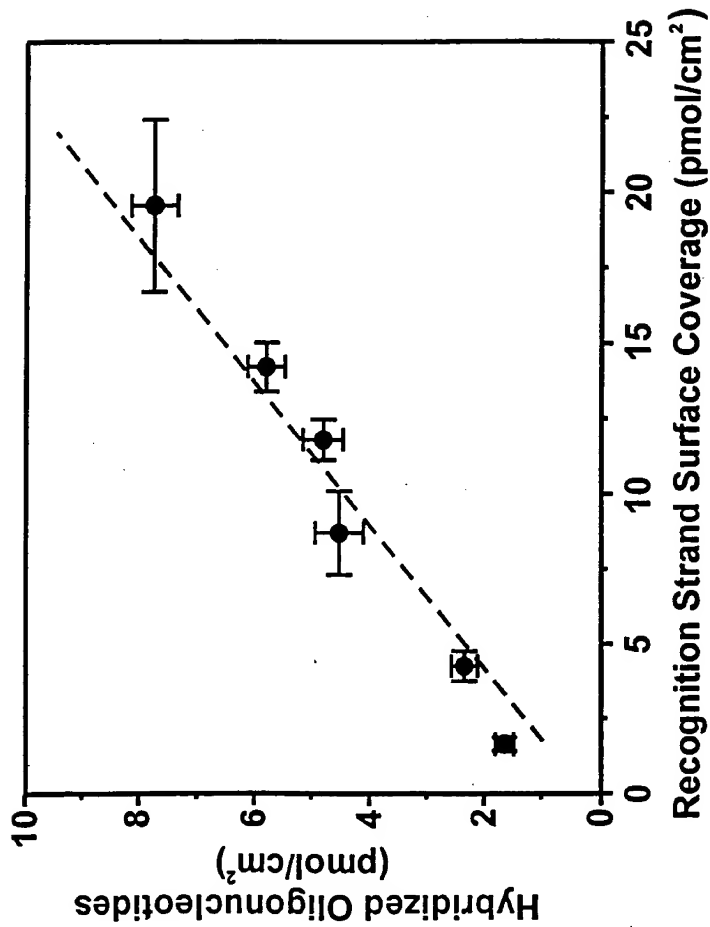


Figure 31

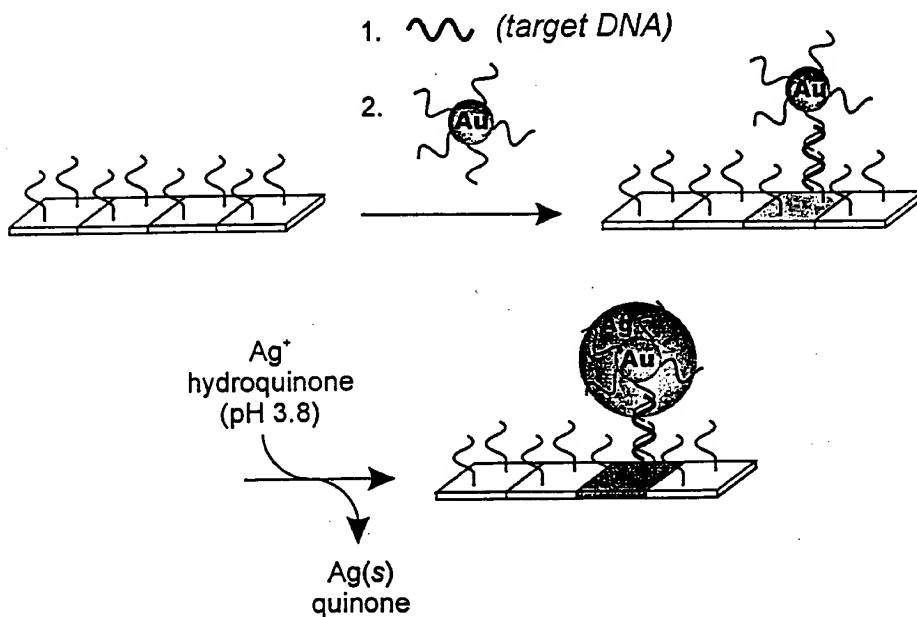
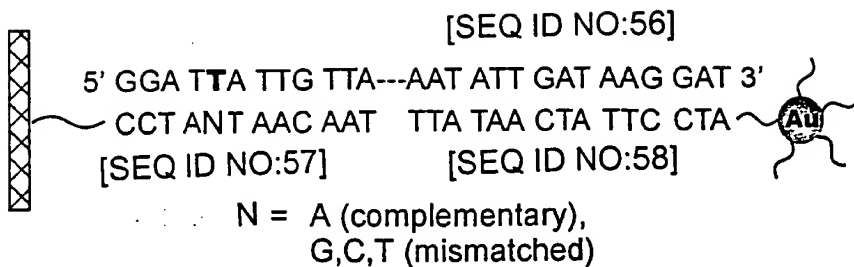


Figure 32

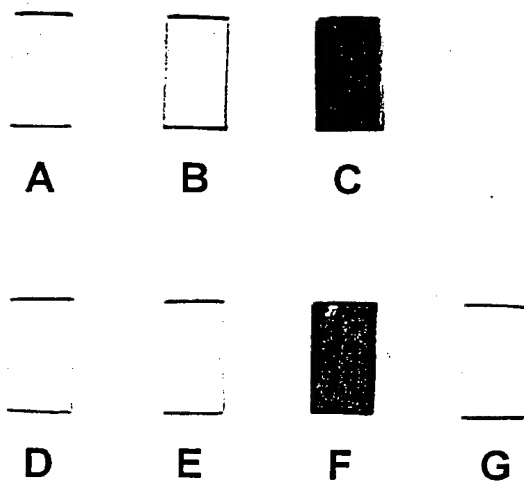


Figure 33

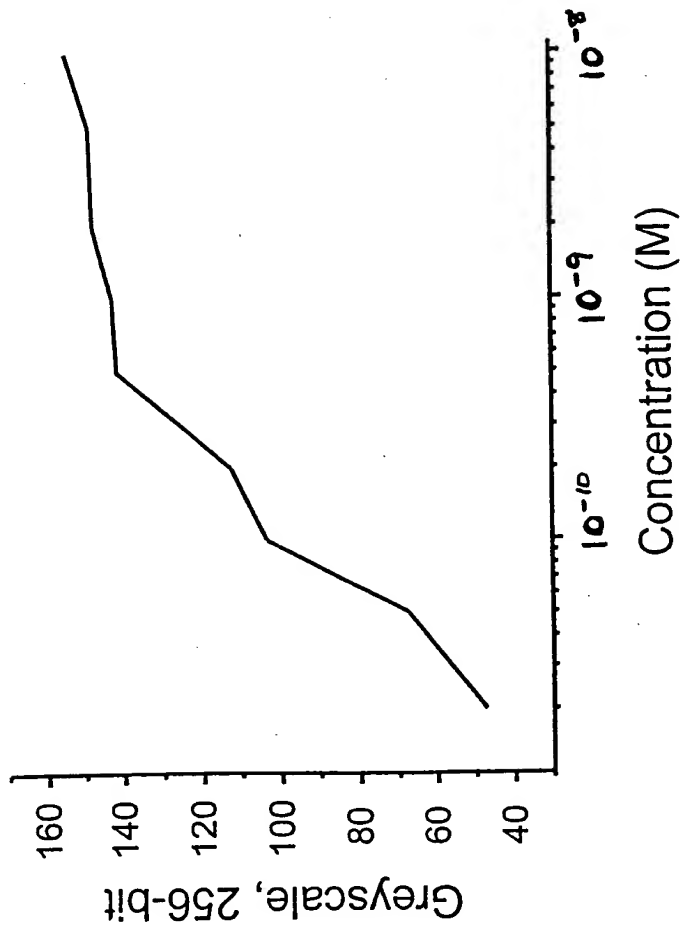


Figure 34

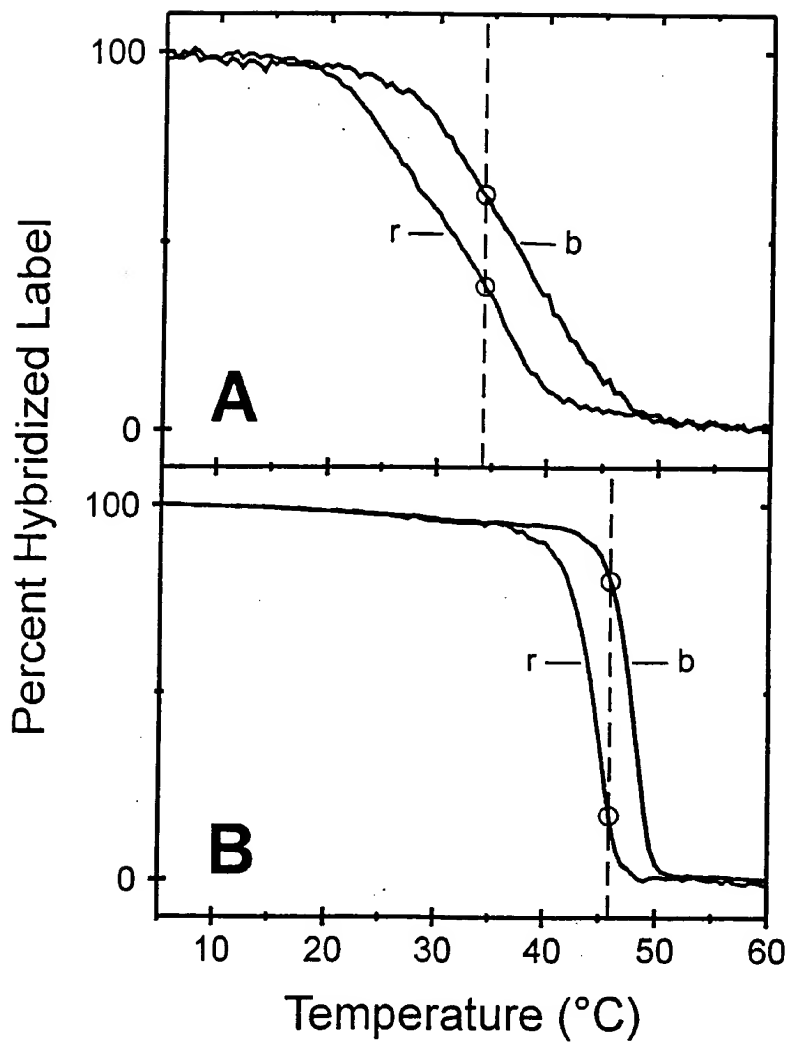


Figure 35

00076501-101201

FIG. 36A

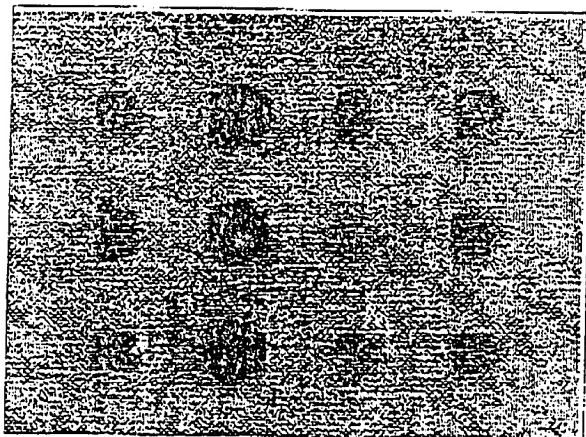
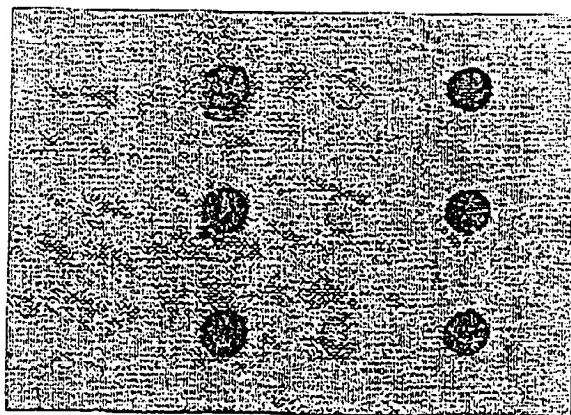
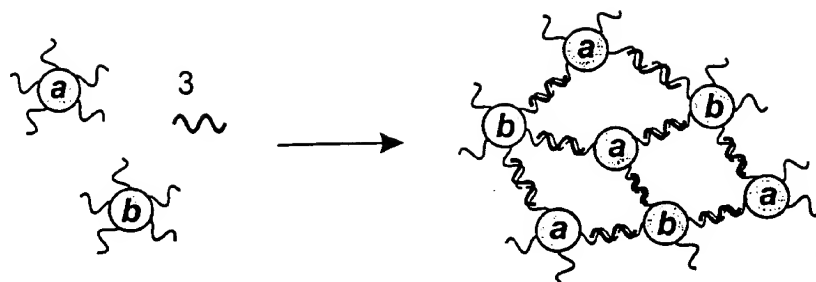


FIG. 36B



C A T G

A



B

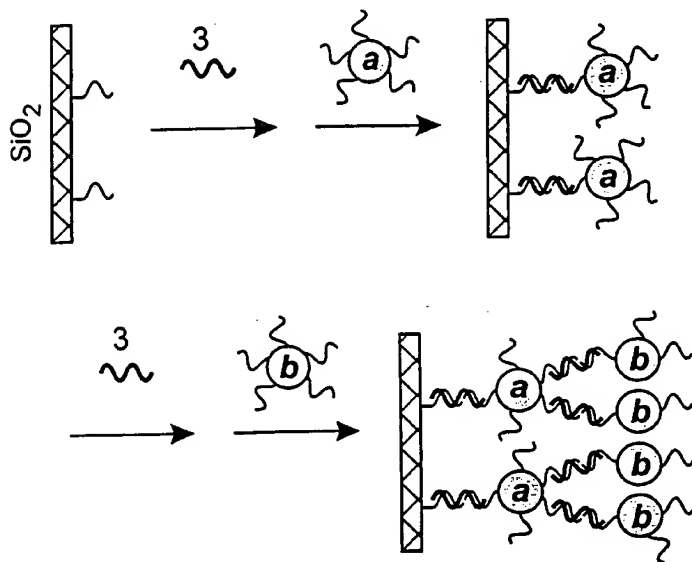


Figure 37

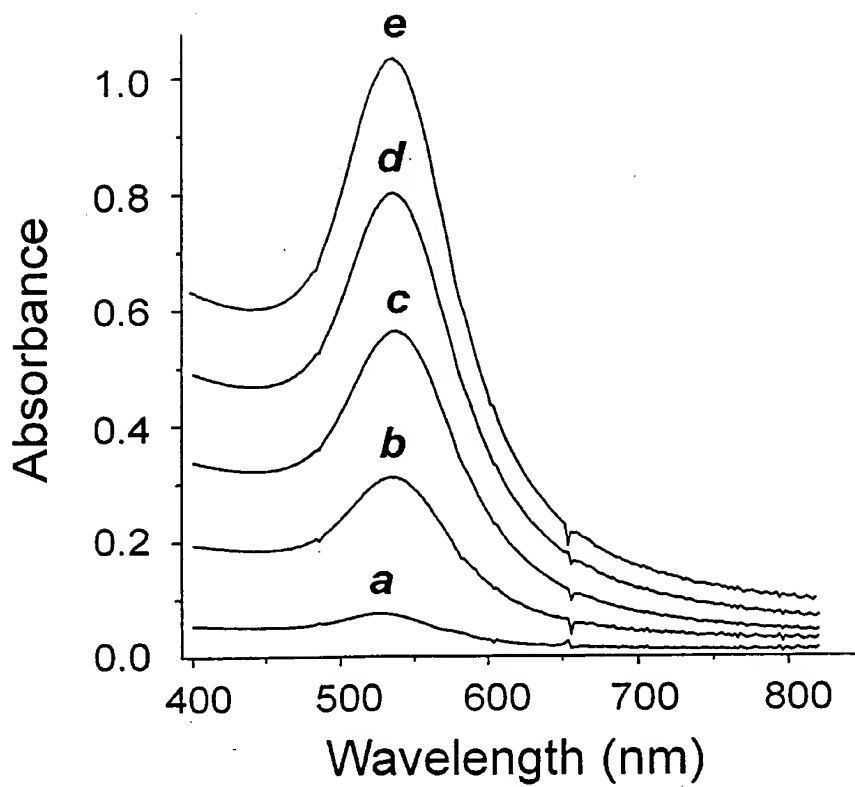


Figure 38A

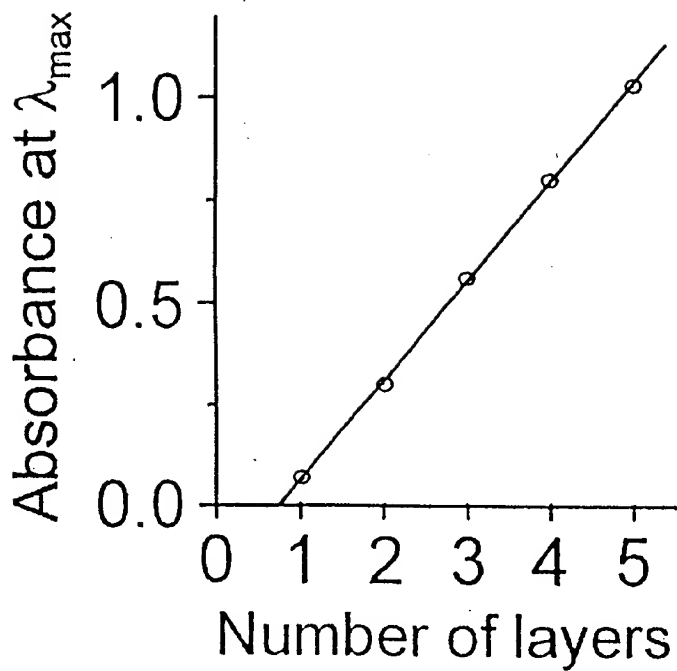


Figure 38B

00076304-104204

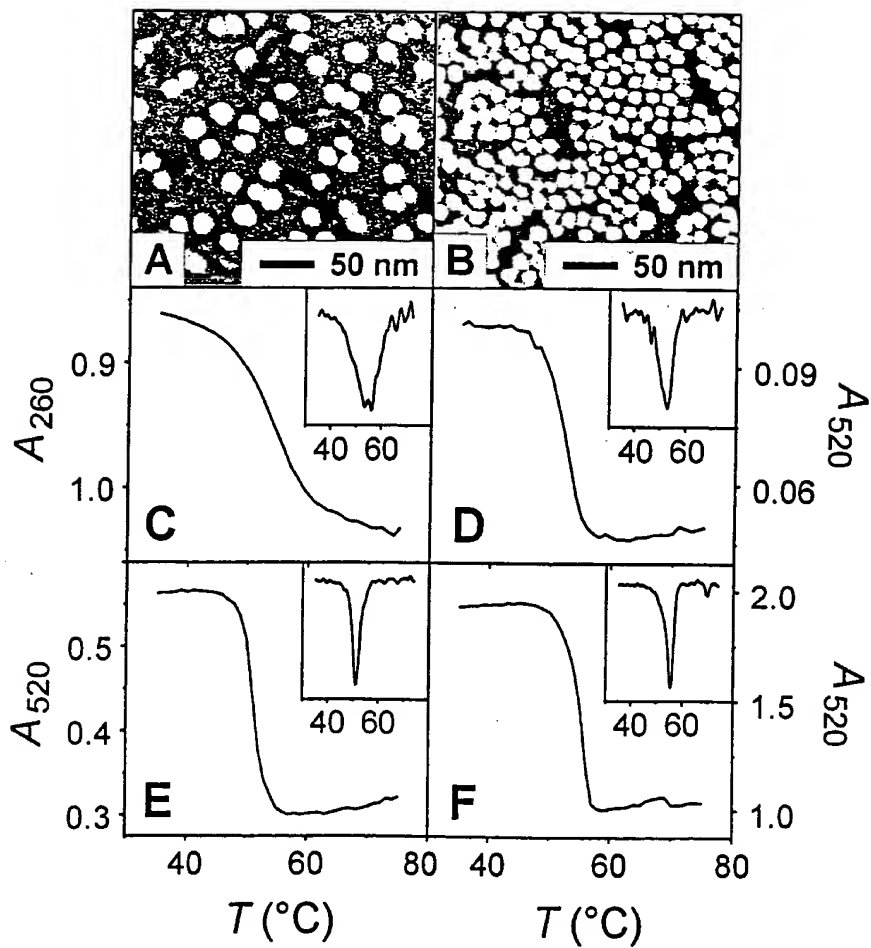


Figure 39

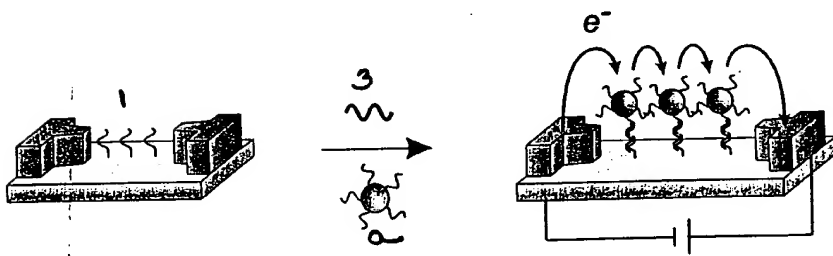
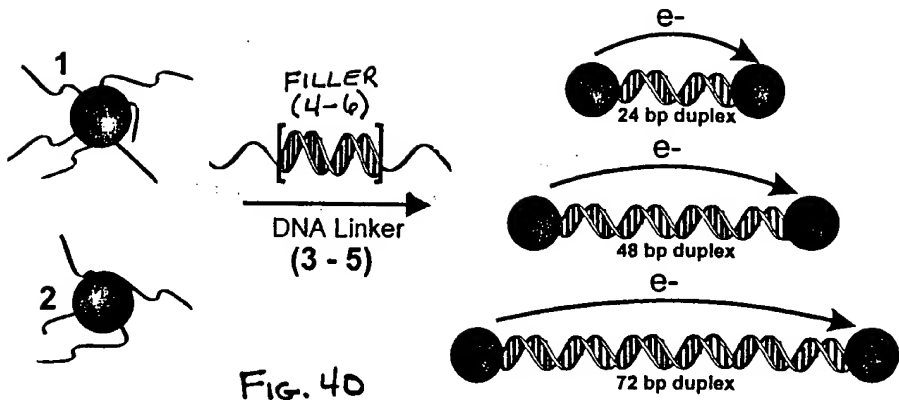


FIG. 41